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88. Optics, Telescopes.

A.D. 1780 . . . . . N° 1252.

Optical Instruments.

STORER'S SPECIFICATION.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, WILLIAM STORER, of Lisle Street, Leicester Fields, in the County of Middlesex, Gentleman, send greeting.

WHEREAS His present most Excellent Majesty King George the Third, by His Letters Patent under the Great Seal of Great Britain, bearing date at Westminster, the Tenth day of April, in the twentieth year of His reign, did give and grant unto me, the said William Storer, my executors, administrators, or assigns, His especial licence, full power, sole priviledge and authority, that I, the said William Storer, during the term of fourteen years therein expressed, should and lawfully might use, exercise, and vend, within the Kingdom of Great Britain called England, His Dominion of Wales, and Town of Berwick-upon-Tweed, my new Invention and discoverys of "CERTAIN PROPERTIES IN LIGHT AND IN OPTICAL GLASSES, AND BY MEANS OF A NEW AND PECULIAR APPLICATION INVENTED CERTAIN TELESCOPES, MICROSCOPES, OPERA GLASSES, AND OTHER OPTICAL INSTRUMENTS, WHICH ARE THEREBY RENDERED MORE ACCURATE, MORE DISTINCT, AND MORE LUMINOUS; AND, IN PARTICULAR, WHEREBY A REFRACTING TELESCOPE OF FIFTEEN INCHES LONG HAS ALL THE POWERS OF A TWO-FOOT REFLECTOR, WITH THE ADDITIONAL ADVANTAGES OF A LARGER FIELD, MORE LIGHT AND DISTINCTNESS OF VISION, AND MAY BE EASIER ADAPTED TO THE SIZE OF THE OBJECT AND STATE OF THE ATMOSPHERE, AND BY WHICH SAID INVENTION ONE AND THE SAME PORTABLE REFRACTING TELESCOPE MAY BE MADE TO ANSWER THE PURPOSE, AND HAVE ALL THE POWERS OF TELESCOPES OF VARIOUS LENGTHS AND SIZES NOW IN USE, AND WHICH NEW-INVENTED TELESCOPES ARE

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ADMIRABLY ADAPTED TO THE PURPOSES OF NAVIGATION, AND OF TERESTIAL AND ASTRONOMICAL OBSERVATIONS;" in which said Letters Patent there is contained a provisoe obliging me, the said William Storer, under my hand and seal, to cause a particular description and ascertain the nature of my said Invention, and in what manner the same is to be performed, and cause the same to be inrolled in His Majesty's High Court of Chancery within four calander months next and immediately after the date of the said Letters Patent, as in and by the same, (reference being thereunto had, will more at large appear).

NOW KNOW YE, that I, the said William Storer, in pursuance of and in compliance with the said provisoe, do hereby declare that the nature of my Invention and discoveries, herein-before particularly mentioned, and the manner in which the same is to be performed, is as follows (that is to say):—

First, distinct vision, or the accurate image of an object, is only to be produced by points formed by rays of light having suffered refraction. Rays of light reflected from and by glass of unequal forms untill they form a true optical paralelism of themselves (and not till then) produce distinct vision. Secondly, I find the human eye is so wonderfully and wisely constructed, that by means of the different humours, and its speculum or rettinæ, they conjunctively and alternately adapt themselves agreeable to the state of the atmosphere, the distance of the object, and the quantity or quality of the light reflected therefrom, from which construction I founded my principle, as having discovered that the eye, when form'd proper for distinct vision, is in every respect in effect the same as a plain mirrour, and that the negrum pigmentum behind the rettinæ serves as the amalgam on a looking-glass to reflect each ray of light proceeding from an object to the eye. Now, the eye being in effect as a plain mirrour, it has not the power in itself of enlarging or diminishing or bringing the image of an object at different distances nearer to itself, any more than a plain mirrour looking-glass, therefore the eye is properly a dilating catadioptrick refractor. But the eye is to be greatly assisted by means of spherical, or glasses with unequal forms, any two or more such glasses retaining the properties of the humours of the eye, and formed and so adapted in different and seperate cells as shall be proper; the same to be observed and provided for as well in compound object glasses as in the eye glasses, as also for spectacles and other optical instruments, to be reciprocally acceded to or receded from each other when and where required, in order to form the image in a true dilating or pantagraphycal parelelism, to be enlarged or diminished at pleasure, being in a state to be readily dilated or contracted, similar to the expansion or contraction, and in conjunction with the dilation

of the optic nerve, without distortion or losing the light by such changes with the same glasses and by which glasses rays of light shall be reflected and varied so often and untill the dilating paralelism formed by them be agreeable to the paralelism form'd by the eye that are to receive them; for in the same manner as the eye forms and act as a plain mirrour, so rays of light under every change, by the means of the aforesaid Invention, shall likewise form an image from an object in a perfect true paralelism, and which said image meeting the paralelism of the eye, the image then becomes in a centric, dilating, or pantagraphical paralelism, to be diminished or enlarged ad infinitum, even to an angle of one third of the hemisphere, which human eye is capable of receiving, and in such angle no light ought to be lost. But magnifying powers, field of, and distinctness is preserved far superior to the most powerfull telescope, or the best optical instruments of the various kinds ever yet known, or that can be made on any other principle, by which means microscopes (as well as telescopes, opera glasses, &c.,) are made to have superior powers with more light and greater distinctness, as instead of the object glass of microscopes (viz.), the glass that first receives the rays from the object, being so small as scarce to admit any light, or not sufficient light for a great magnifying power or opake objects. Now, by my Invention, as aforesaid, the object glasses of microscopes will admit being as large, and the same as for telescopes as microscopes, composed as aforesaid, performs properly as telescopes, and visa versa, as no refractions whatever can disturb or distort an image once formed by my Invention of a true centric dilating pantagraphycal parelelism. Optical glasses of every kind, according to their various properties, the state of the atmosphere, and the different powers required of them, must be adapted and treated as aforesaid to form the image in a true paralelism to be received by the eye, as the object itself, with no other alteration than that of being nearer, consequently appears to the eye larger. For want of such knowledge of the properties and applications before mentioned (in light, and as is required in glass), all optical instruments have hitherto been very deficient, as opticians all well know they have never yet been able properly to account for, much less to remove, the errors proceeding from refracted or reflected light, or the various property's in glass, or their alternate changes necessary for distinct vision. For when a magnifying power was carried beyond a certain degree, as allowed by all opticians, notwithstanding the latest improvement of acromatic object glasses, they wanted light, field of view, and distinctness, which mathematicians know is contrary to their own demonstrations of the laws of optics, and which no one has ever before been able to account for. Now every difficulty is remov'd by the aforesaid new discovered properties in light, and in optical glasses, by

means of the new and aforesaid peculiar applications thereof, in causing rays of light, by the laws of reflection, to produce distinct vision, which S^r^ Isaac Newton endeavoured to accomplish, and which no doubt was the reason that great optician had recourse to reflected in preference to refracted light, and he often wished for metal of a similar quality to glass to reflect light. Now he had not discovered, nor was it ever before known, that convex, or glasses with unequal forms, might be applied so as to produce a true paralelism of the image of any object by the laws of reflection by refracting mediums, and which I declare to be my discovery, and that distinct vision at various distances, with great magnifying powers and sufficient light, is to be produced by no other means than as aforesaid. Now, be it remembred, that refracted rays of light are subservient to reflected rays of light, yet reflected rays must be refracted to produce distinct vision, which at last is produced by points by the laws of reflection, and which entirely governs the laws of refraction. Note, paralelism is probably a new technical term in optics, yet necessary to be applied in this case, as it is an effect (produced by the laws of catoptrics) newly discovered by me, and don't appear to be understood by mathematicians or opticians. By an optical paralelism, I mean an invisible image, formed by points of rays of light, from two or more reflections, and which points shall meet, unite, but not pass other, but take a new direction in angles equal to each other, as the ray of incidents with the ray of reflection. By a dilating or pantagraphical paralelism is meant two paralelisms so meeting as the points from each unite. B a centric dilating pantagraphycal paralelism I mean three paralelisms so united and formed as to reciprocally assist each other under every change required of them, in which state the minutest points of the rays producing the image may be caused to accede to or recede from each other in a dilating form, ad infinitum, without distorting the image or wanting light, a phœnomenon in optics never before known, though upon which the distinctness of vision, great magnifying powers, a large field of view, and sufficiency of light, entirely depends.

In witness whereoff, I, the said William Storer, have hereunto set my hand and seal, this Tenth day of August, One thousand seven hundred and eighty.

WILLIAM (L.S.) STORER.

Sealed and delivered by the within-named William Storer (being first duly stampt), in the presence of

J. CARTER.

JOS. LOVE,

Official Clerk of the Petty Bagg.

AND BE IT REMEMBRED, that on the same Tenth day of August, in the year above mentioned, the aforesaid William Storer came before our said Lord the King in His Chancery, and acknowledged the Specification aforesaid, and all and every thing therein contained and specified, in form above written. And also the Specification aforesaid was stampt according to the tenor of the Statute made in the sixth year of the reign of William and Mary, late King and Queen of England, and so forth.

T. ANGUISH.

Inrolled the same day and year last above mentioned.

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